ART 34 AMDT

10/019868

01PH 0406USP

Phoenix Contact GmbH &Co

531 Rec'd PCT/ 23 DEC 2001

ANNEXES

Claims

1. A method for providing quasi-continuous transmission of a temporally variable parameter to initiate an operationally related function in a control and data transmission system, comprising the following steps:

- transmission of at least one information element (S, Y) at discrete time intervals via a transmission medium (2) to the receiver device (3), and
- determination of the time characteristic of the parameter at least approximately in a processing device (4) connected downstream of the receiver device (3), by taking account of at least one information element,

the transmitted information being a discrete value of the temporally variable parameter ($S(t_i)$) and the time characteristic being determined at least approximately by taking account of at least two transmitted discrete values of the parameter.

2. The method as claimed in claim 1, characterized in that

the transmitted information is a discrete value of a parameter which, in a predefined manner, in particular by means of an allocation stored in the processing device, defines the time characteristic of the parameter which initiates the operationally related function.

ART 34 AMDT

3. The method as claimed in claim 1 or 2, characterized in that

the determination of the time characteristic of the parameter comprises interpolation, for example linear installation, polynomial interpolation or spline interpolation.

4. The method as claimed in one of claims 1 to 3, characterized in that

an operationally related function is initiated in response to the calculated time characteristic of the parameter.

5. The method as claimed in one of claims 1 to 4, characterized in that

the determined parameter is used as an input parameter for a control circuit.

6. The method as claimed in one of claims 1 to 5, characterized in that

the operationally related function is initiated at a time t_x, at which the determined parameter attains or exceeds a predefined limited value.

7. The method as claimed in one of claims 1 to 6, characterized in that

the parameter is a measure of the position of an object driven to movement, and the drive is de-activated to achieve a predefined position of the object.

8. The method as claimed in one of claims 1 to 7,

characterized in that

a time marker is transmitted to the receiver simultaneously with the parameter or information.

9. The method as claimed in one of claims 1 to 8, characterized in that,

in determining the time characteristic of the parameter, a time shift t_a occurs which essentially corresponds to the time delay caused by the transmission of the information via the transmission medium.

10. The method as claimed in claims 2 and 9, characterized in that

the determination of the time characteristic of the parameter in the period between the reception of values comprises the cyclical performance of the following steps:

a) formation of the difference between the last two received or calculated values of the parameter

b) division of the difference calculated according to a) by the difference between the times at which the two values were received,

c) addition of the time period elapsed since the time when the last value of the parameter to t_a was received,

d) multiplication of the results obtained according to b) and c),

e) addition of the last obtained value of the parameter to the result calculated according to d).

11. The method as claimed in claims 2 and 9, characterized in that

the determination of the time characteristic of the parameter in the period between the reception of values comprises the cyclical performance of the following steps:

a) addition of the time period which has elapsed since the last value was received to t_0 to produce a time period t_d

b) determination of the instantaneous value of the parameter from the time period t_d and the predefined allocation between the time period and the parameter.

12. A control and data transmission system to carry out a method as claimed in one of claims 1 to 11, comprising at least

- a control device to control
- I/O components (1, 3) via
- an automation bus (2),

characterized in that

a processing device (4), which is set up for at least approximate determination of the time characteristic of the parameter, taking account of at least two information elements transmitted via the bus, is connected to at least one I/O component (3),

furthermore comprising a device (5) which performs an operationally related function in response to the time characteristic of the parameter.

13. The control and data transmission system as claimed in claim 12,

characterized in that

the processing device (4) comprises a logic device to carry out interpolation or regression on the basis of transmitted discrete values (S_0, S_1, ... S_5) of the

parameter to determine the time characteristic of the parameter.

14. The control and data transmission system as claimed in claim 12,

characterized in that

the processing device (4) comprises a device in which an allocation of the information transmitted via the bus and a time period for the time characteristic of the parameter is stored in a hardware and/or software implementation.

15. The control and data transmission system as claimed in claims 12 to 14,

characterized in that

a sensor records the position of a driven object, said position being discretely transmitted via the bus, and the drive can be controlled in response to the determined time characteristic of the position.